

## **WORK ASSIGNMENT**

**TITLE:** Support for Russian Arctic Diesel Black Carbon Initiative

**CONTRACT:** EP-D-14-033

### **WORK ASSIGNMENT MANAGER:**

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**LABOR HOURS:** TBD

**DURATION:** Feb 1, 2015 – September 30, 2016

### **SUMMARY:**

The purpose of this Work Assignment is to provide support to the U.S. Environmental Protection Agency (EPA)'s Office of International and Tribal Affairs (OITA) for the *Russian Arctic Diesel Black Carbon Initiative*. The contractor will be responsible for:

- Complete a Russia-wide emissions inventory from diesel sources of black carbon.
- Complete workplan and progress reports.

### **BACKGROUND:**

In December 2009, within the framework of the Copenhagen Summit, the Chair of the White House Council on Environmental Quality, Ms. Nancy Sutley, announced the Arctic Black Carbon Initiative and the Administration's intention to commit \$5 million towards international cooperation to quantify emissions and impacts of black carbon from fossil fuel and biomass burning and to reduce black carbon emissions and the associated warming effects in and around the Arctic. USEPA was chosen as the US Government (USG) agency with expertise in black carbon reduction from diesel sources and was given \$2.5 million of the \$5 million to work on that effort. USDA was chosen as the USG expert on forest fires and agricultural burning and DOE was chosen as the expert on residential heating sources and therefore, were given the remainder of the funds for their efforts.

Under the larger Black Carbon Diesel Initiative, EPA engages with partners from government agencies; US Arctic and Russian NGOs; Russian and Arctic stakeholders; indigenous communities and observer groups to assess diesel sources of black carbon in the Arctic and develop demonstration projects, policy recommendations and financing options. Specifically, EPA is working with Battelle Memorial Institute (Battelle), Murmansk State Technical University (MSTU) and WWF, Russia to 1) assess primary sources of black carbon in the Russian Arctic 2) develop a baseline emission inventory for black carbon, 3) implement

targeted, on-the-ground demonstration projects concerning on-road and off-road diesel engines, and 4) establish policy recommendations and financing options, including legislative and regulatory options, incentives for reducing emissions and identification of innovative financing sources.

For task 2, EPA chose to develop an emissions inventory in the Murmansk Region. The top two sources of black carbon from diesel were on-road vehicles and off-road vehicles at mines. This project will support expanding the Murmansk area regional emissions inventory Russia-wide. EPA will report these findings to the Arctic Council through the Arctic Contaminants Action Program (ACAP).

### **Global Relevance of Diesel Emissions in the Arctic:**

The main sources of black carbon in the Arctic, according to the 2011 Progress Report and Recommendation to Ministers by the Arctic Council Short-Lived Climate Forcer Task Force, are road transport (34%) and off-road transport (20%), followed by open burning (23%) and then residential sources. Although black carbon emissions inventories are relatively uncertain and pollution from sources outside the Arctic does have impacts within the Arctic, diesel emissions represent the largest inventory component by far in the Arctic itself. Off-road sources include locomotives, ships, construction vehicles, and farming equipment, all using diesel fuel. Emissions of black carbon also involve the co-emission of other pollutants, which can have additional warming or cooling effects. Of all sources of black carbon emissions, diesel emissions are the richest in warming black carbon pollutants.

Substantial black carbon reductions are possible across the diesel sector. In the United States, changes in fuel composition and advances in engine design have reduced black carbon emissions from heavy duty diesel engines by 99%. The technologies are readily available and cost-effective for many engines. Black carbon, particularly from transportation sources, is heavily concentrated in urban areas, which means that reducing these emissions will lead to improved urban air quality and corresponding improvements to public health. These reasons alone warrant aggressive action on black carbon.

### **REQUIREMENTS:**

#### **Task 1: Work Plan Development and Progress Reports**

The contractor shall prepare a Work Plan for completing the requirements of this Work Assignment. The Work Plan will describe the tasks; identify a schedule for deliverables, staffing, level of effort, and costs; and present conflict of interest certification. The contractor shall submit the Work Plan to the Work Assignment Manager (WAM) within 30 business days of receipt of the Work Assignment.

The contractor shall submit monthly progress reports to the WAM, describing the work that has been accomplished, labor usage and costs incurred to date, and projected labor usage and costs at project completion. The reports shall describe any difficulties encountered in completing the work and identify remedial actions taken during the reporting period. The contractor shall submit the progress report as specified in the contract.

## **Task 2: Assessing Russia-Wide Emissions of Black Carbon from Diesel Sources**

This project should develop a black carbon emission inventory from diesel sources in Russia. It should cover several sectors, including on-road transport, off-road transport (i.e. agriculture, railway, mining and construction sectors) and diesel generators.

On-road transport is the biggest source of diesel use in Russia, accounting for around two-thirds of Russia's diesel consumption in 2010, according to International Energy Agency statistics. EPA and Battelle have developed a detailed methodology for estimating on-road black carbon emissions in Russia, based on existing Russian and international methodologies. Russia-specific emission factors for different categories of on-road vehicles were also selected and compiled and methods of collecting activity data developed. The methodology and data for estimating on-road black carbon emissions and extrapolating results from the Murmansk region to Russia-wide will be applied. Many of the data such as the coefficient of use and driving patterns could be used to check or correct existing data, since Russia, like many developing countries, lacks accurate and specific activity data. Collaboration with research institutes in Russia to leverage existing resources and data should be continued.

Agriculture, railways and open-pit mines are also major diesel consumers. The contractor shall support estimating black carbon emissions from these sources by fuel consumption and emission factors, and the use of data collected during the EPA project to correct and calibrate existing data. As mining appears to be one of the largest black carbon source in the Murmansk region (and potentially in the Russian Arctic as well), detailed activity data for mines has been collected and mining output to extrapolate black carbon emissions from the Murmansk region to Russia should be used.

For other sources that do not appear major, including construction, power generation and other transport, an estimate of emissions based on fuel use should be made.

As the result of this study, an emission inventory for black carbon from diesel sources in Russia should be developed. Data and methodologies with scientific communities, governments and other stakeholders in both countries through webinars and/or an interactive website with regional emissions information should be shared. This will help better understand the scale of black carbon emissions in Russia and contributions from different sectors, which in turn, would help the Russian federal and local governments to develop policies to reduce particulate and black carbon emissions.

### *Proposed Agenda/ Timeframe*

The project proposes several key steps associated with the technical approach above.

- Adaptation of methodologies for developing emission inventory for black carbon from diesel sources to the national scale (3 months after start)
- Data collection and processing (8 months after start)
- Draft black carbon emission inventory from diesel sources (10 months after start)
- Final inventory (14 months after start)
- Dissemination of black carbon emission inventory to Russian and U.S. stakeholders (15 months after start)

**SCHEDULE & DELIVERABLES:**

The schedule and deliverables for each of the tasks are identified in the Requirements section above.